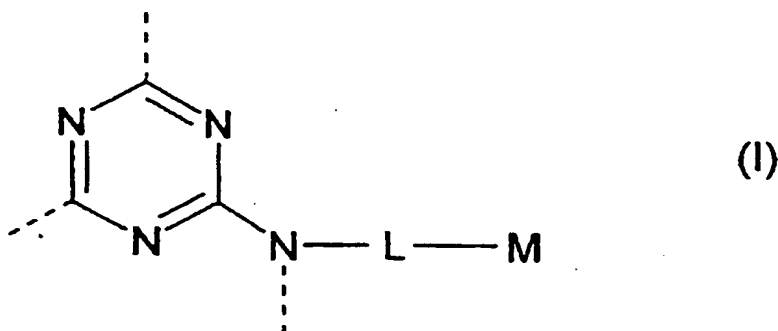


## Patent Claims:

1. A herbicide combination herbicide combinations comprising a synergistically effective amount of components (A) and (B), where

5

(A) is one or more herbicidally active aminotriazine compounds having a partial structure of the formula (I)



where

10 L: is a straight-chain or branched, optionally mono- or polysubstituted and/or -bridged alkylene group having 1 to 6 carbon atoms, where one CH<sub>2</sub> group may be replaced by O, N, S(O)<sub>x</sub>, where x is 0, 1 or 2, or by NO, or is a corresponding alkenylene or alkynylene group having 2 to 8 carbon atoms, where one CH<sub>2</sub> group may be replaced by O, and which is optionally mono- or polysubstituted and/or -bridged, and

15

M is an unsubstituted or substituted aryl or heterocyclyl group, with the proviso that one of the two remaining radicals on the triazine ring is haloalkyl if -L- is a group of the formula -CH(CH<sub>3</sub>)-CH<sub>2</sub>-O-,

20 and

(B) is one or more herbicides selected from the group of compounds consisting of

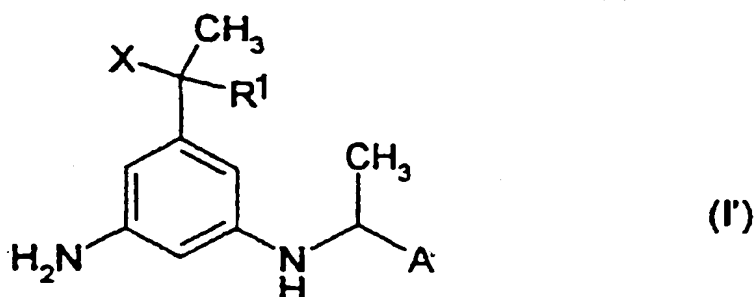
(B1) foliar- and/or soil-acting herbicides which are active against monocotyledonous harmful plants,

25 (B2) herbicides which are active against predominantly dicotyledonous harmful plants and

(B3) herbicides which are active against monocotyledonous and dicotyledonous harmful plants and

30 (B4) herbicides which are active against monocotyledonous and dicotyledonous harmful plants and which can be employed specifically in tolerant crops or on non-crop land,

except for combinations of herbicides of the formula (I')



in which

$R^1$  is H or methyl,

5 X is a chlorine or fluorine atom and

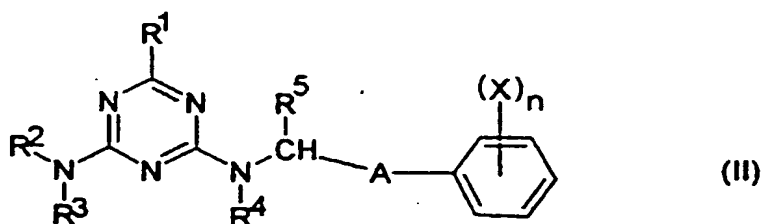
A is a phoxymethyl group which is unsubstituted in the phenyl ring or substituted by one or two radicals selected from the group consisting of methyl and fluorine, or is a benzofuran-2-yl or benzothiophen-2-yl radical,

10 with herbicides from the group consisting of isoproturon, diclofop-methyl, fenoxaprop-ethyl and amidosulfuron.

2. The herbicide combination as claimed in claim 1, wherein component (A) comprises a compound of the formula (II) - (IX):

15

- compounds of the formula (II) and their salts



in which

20  $R^1$  is (C<sub>1</sub>-C<sub>6</sub>)-alkyl,

which is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, cyano, nitro, thiocyanato, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfonyl, (C<sub>2</sub>-C<sub>4</sub>)-alkenyl, (C<sub>2</sub>-C<sub>4</sub>)-alkynyl, phenyl, which is unsubstituted or substituted, and heterocyclyl having 3 to 6 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, the ring being unsubstituted or substituted,

25

$R^2$  and  $R^3$  in each case independently of one another are hydrogen, amino or alkylamino or dialkylamino having in each case 1 to 6 carbon atoms in the alkyl radical, an acyclic or cyclic hydrocarbon radical or hydrocarbonoxy radical having in each case 1 to 10 carbon atoms or a heterocyclyl radical, heterocyclyloxy radical or heterocyclylamino radical having in each case 3 to 6 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, where each of the five last-mentioned radicals is unsubstituted or substituted, or an acyl radical or

$R^2$  and  $R^3$  together with the nitrogen atom of the group  $NR^2R^3$  are a heterocyclic radical having 3 to 6 ring atoms and 1 to 4 hetero ring atoms, where the further hetero ring atoms which are optionally present in addition to the nitrogen atom are selected from the group consisting of N, O and S and the radical is unsubstituted or substituted,

$R^4$  is hydrogen, amino, alkylamino or dialkylamino having in each case 1 to 6 carbon atoms in the alkyl radical, an acyclic or cyclic hydrocarbon radical or hydrocarbonoxy radical having in each case 1 to 10 carbon atoms, preferably having 1 to 6 carbon atoms or a heterocyclyl radical, heterocyclyloxy radical or heterocyclylamino radical having in each case 3 to 6 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, where each of the five last-mentioned radicals is unsubstituted or substituted, or an acyl radical,

$R^5$  is hydrogen, halogen, nitro, cyano, thiocyanato or a radical of the formula  $-B^1-Y^1$ , where  $B^1$  and  $Y^1$  are as defined below,

A is an alkylene radical having 1 to 5 straight-chain carbon atoms or alkenylene or alkynylene having in each case 2 to 5 straight-chain carbon atoms, where each of the three last-mentioned diradicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and a radical of the formula  $-B^2-Y^2$ ,

$(X)_n$  are n substituents X, where X in each case independently of one another, is halogen,  $(C_1-C_6)$ -alkyl,  $(C_2-C_6)$ -alkenyl,  $(C_2-C_6)$ -alkynyl,  $(C_1-C_6)$ -alkoxy,  $(C_2-C_6)$ -alkenyloxy,  $(C_2-C_6)$ -alkynyloxy,  $[(C_1-C_4)$ -alkyl]-carbonyl,  $[(C_1-C_4)$ -alkoxy]-carbonyl or  $[(C_1-C_4)$ -alkylthio]-carbonyl, where the hydrocarbon-containing moieties in the 9 last-mentioned radicals are unsubstituted or substituted, or is a radical of

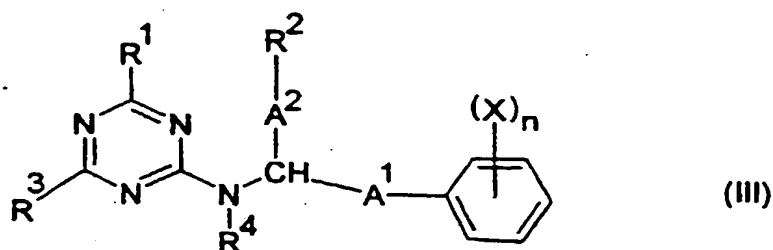
the formula  $-B^o-R^o$ , where  $B^o$  is as defined below and  $R^o$  is an aromatic, saturated or partially saturated carbocyclic or heterocyclic radical, where the cyclic radical is substituted or unsubstituted, or two adjacent radicals X together are a fused-on cycle having 4 to 6 ring atoms which is carbocyclic or contains hetero ring atoms selected from the group consisting of O, S and N and which is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,  $(C_1-C_4)$ -alkyl and oxo,

n is 0, 1, 2, 3, 4 or 5,

$B^o, B^1, B^2$  in each case independently of one another are a direct bond or a divalent group of the formula  $-O-$ ,  $-S(O)_p-$ ,  $-S(O)_p-O-$ ,  $-O-S(O)_p-$ ,  $-CO-$ ,  $-O-CO-$ ,  $-CO-O-$ ,  $-NR'-$ ,  $-O-NR'-$ ,  $-NR'-O-$ ,  $-NR'-CO-$ ,  $-CO-NR'-$ , where  $p = 0, 1$  or  $2$  and  $R'$  is hydrogen, alkyl having 1 to 6 carbon atoms, phenyl, benzyl, cycloalkyl having 3 to 6 carbon atoms or alkanoyl having 1 to 6 carbon atoms,

$Y^1, Y^2$  in each case independently of one another are H or an acyclic hydrocarbon radical having, for example, 1 to 20 carbon atoms or a cyclic hydrocarbon radical having 3 to 8 carbon atoms or a heterocyclic radical having 3 to 9 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, where each of the three last-mentioned radicals is unsubstituted or substituted;

- compounds of the formula (III) or their salts



25 in which

$R^1$  is aryl, which is unsubstituted or substituted, or  $(C_3-C_9)$ -cycloalkyl, which is unsubstituted or substituted, or heterocyclyl, which is substituted or unsubstituted, or

$(C_1-C_6)$ -alkyl,  $(C_2-C_6)$ -alkenyl or  $(C_2-C_6)$ -alkynyl,

30 where each of the 3 last-mentioned radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, hydroxyl, cyano, nitro, thiocyanato,  $(C_1-C_4)$ -alkoxy,  $(C_1-C_4)$ -haloalkoxy,  $(C_2-C_4)$ -

alkenyloxy, (C<sub>2</sub>-C<sub>4</sub>)-haloalkenyloxy, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfonyl, (C<sub>1</sub>-C<sub>4</sub>)-haloalkylsulfinyl, (C<sub>1</sub>-C<sub>4</sub>)-haloalkylsulfonyl and (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl, which is unsubstituted or substituted, and phenyl, which is unsubstituted or substituted, and heterocyclyl, which is unsubstituted or substituted, and radicals of the formulae R'-C(=Z')-, R'-C(=Z')-Z-, R'-Z-C(=Z')-, R'R''N-C(=Z')-, R'-Z-C(=Z')-O-, R'R''N-C(=Z')-Z-, R'-C(=Z')-NR''- and R'R''N-C(=Z')-NR'''-, in which R', R'' and R''' in each case independently of one another are (C<sub>1</sub>-C<sub>6</sub>)-alkyl, aryl, aryl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl or (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, where each of the 5 last-mentioned radicals is unsubstituted or substituted, and in which Z and Z' independently of one another are each an oxygen or sulfur atom,

R<sup>2</sup> is (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl, which is unsubstituted or substituted, (C<sub>4</sub>-C<sub>9</sub>)-cycloalkenyl, which is unsubstituted or substituted, heterocyclyl, which is unsubstituted or substituted, or phenyl, which is unsubstituted or substituted, or

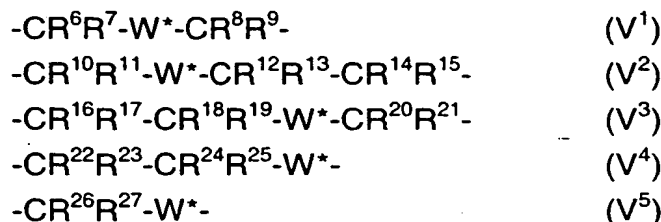
R<sup>3</sup> is hydrogen, (C<sub>1</sub>-C<sub>6</sub>)-alkyl, aryl or (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl, where each of the 3 last-mentioned radicals is unsubstituted or substituted, or a radical of the formula -N(B<sup>1</sup>-D<sup>1</sup>)(B<sup>2</sup>-D<sup>2</sup>) or -NR'-N(B<sup>1</sup>-D<sup>1</sup>)(B<sup>2</sup>-D<sup>2</sup>), in which in each case B<sup>1</sup>, B<sup>2</sup>, D<sup>1</sup> and D<sup>2</sup> are as defined below and R' is hydrogen, (C<sub>1</sub>-C<sub>6</sub>)-alkyl or [(C<sub>1</sub>-C<sub>4</sub>)-alkyl]-carbonyl,

R<sup>4</sup> is a radical of the formula -B<sup>3</sup>-D<sup>3</sup>, where B<sup>3</sup> and D<sup>3</sup> are as defined below,

A<sup>1</sup> is straight-chain alkylene having 1 to 5 carbon atoms or straight-chain alkenylene or alkynylene having in each case 2 to 5 carbon atoms, where each of the three last-mentioned diradicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and radicals of the formula -B<sup>4</sup>-D<sup>4</sup>, where B<sup>4</sup> and D<sup>4</sup> are as defined below,

A<sup>2</sup> is a direct bond or straight-chain alkylene having 1 to 4 carbon atoms or straight-chain alkenylene or alkynylene having in each case 2 to 5 carbon atoms, where each of the three last-mentioned diradicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, cyano,

thiocyanato and radicals of the formula  $-B^5-D^5$ , or a divalent radical of the formula  $V^1$ ,  $V^2$ ,  $V^3$ ,  $V^4$  or  $V^5$ ,



10 where each of the radicals  $R^6$  to  $R^{27}$ , in each case independently of one another, is hydrogen, halogen, nitro, cyano, thiocyanato or a radical of the formula  $-B^6-D^6$ ,

$W^*$  is in each case an oxygen atom, a sulfur atom or a group of the formula  $N(B^7-D^7)$  and

15  $B^5$ ,  $B^6$ ,  $B^7$ ,  $D^5$ ,  $D^6$  and  $D^7$  are as defined below,

$B^1$ ,  $B^2$ ,  $B^3$  and  $B^7$  in each case independently of one another are a direct bond or a divalent group of the formulae  $-C(=Z^*)-$ ,  $-C(=Z^*)-Z^{**}-$ ,  $-C(=Z^*)-NH-$  or  $-C(=Z^*)-NR^*-$ , where  $Z^*$  = an oxygen or sulfur atom,  $Z^{**}$  = an oxygen or sulfur atom and  $R^*$  =  $(C_1-C_6)$ -alkyl, aryl, aryl- $(C_1-C_6)$ -alkyl,  $(C_3-C_9)$ -cycloalkyl or  $(C_3-C_9)$ -cycloalkyl- $(C_1-C_6)$ -alkyl, where each of the 5 last-mentioned radicals is unsubstituted or substituted,

$B^4$ ,  $B^5$  and  $B^6$  in each case independently of one another are a direct bond or a divalent group of the formulae  $-O-$ ,  $-S(O)_p-$ ,  $-S(O)_p-O-$ ,  $-O-S(O)_p-$ ,  $-CO-$ ,  $-O-CO-$ ,  $-CO-O-$ ,  $-S-CO-$ ,  $-CO-S-$ ,  $-S-CS-$ ,  $-CS-S-$ ,  $-O-CO-O-$ ,  $-NR^O-$ ,  $-O-NR^O-$ ,  $-NR^O-O-$ ,  $-NR^O-CO-$ ,  $-CO-NR^O-$ ,  $-O-CO-NR^O-$  or  $-NR^O-CO-O-$ , where  $p$  is the integer 0, 1 or 2 and  $R^O$  is hydrogen,  $(C_1-C_6)$ -alkyl, aryl, aryl- $(C_1-C_6)$ -alkyl,  $(C_3-C_9)$ -cycloalkyl or  $(C_3-C_9)$ -cycloalkyl- $(C_1-C_6)$ -alkyl, where each of the 5 last-mentioned radicals is unsubstituted or substituted,

30  $D^1$ ,  $D^2$ ,  $D^3$ ,  $D^4$ ,  $D^5$  and  $D^6$  in each case independently of one another are hydrogen,  $(C_1-C_6)$ -alkyl, aryl, aryl- $(C_1-C_6)$ -alkyl,  $(C_3-C_9)$ -cycloalkyl or  $(C_3-C_9)$ -cycloalkyl- $(C_1-C_6)$ -alkyl, where each of the 5 last-mentioned radicals is unsubstituted or substituted, or in each case two radicals  $D^5$  of two groups  $-B^5-D^5$  attached to one carbon atom are attached to one another forming an alkylene group having 2 to 4 carbon atoms which is unsubstituted or substituted by one or more radicals

selected from the group consisting of (C<sub>1</sub>-C<sub>4</sub>)-alkyl and (C<sub>1</sub>-C<sub>4</sub>)-alkoxy,

(X)<sub>n</sub> are n substituents X, where X, in each case independently of one another, is halogen, hydroxyl, amino, nitro, formyl, carboxyl, cyano, thiocyanato, aminocarbonyl or (C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>1</sub>-C<sub>6</sub>)-alkylthio, mono-(C<sub>1</sub>-C<sub>6</sub>)-alkylamino, di-(C<sub>1</sub>-C<sub>4</sub>)-alkylamino, (C<sub>2</sub>-C<sub>6</sub>)-alkenyl, (C<sub>2</sub>-C<sub>6</sub>)-alkynyl, [(C<sub>1</sub>-C<sub>6</sub>)-alkyl]-carbonyl, [(C<sub>1</sub>-C<sub>6</sub>)-alkoxy]-carbonyl, mono-(C<sub>1</sub>-C<sub>6</sub>)-alkylamino-carbonyl di-(C<sub>1</sub>-C<sub>4</sub>)-alkylamino-carbonyl, N-(C<sub>1</sub>-C<sub>6</sub>)-alkanoyl-amino or N-(C<sub>1</sub>-C<sub>4</sub>)-alkanoyl-N-(C<sub>1</sub>-C<sub>4</sub>)-alkylamino, where each of the 13 last-mentioned radicals is unsubstituted or substituted, preferably unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, hydroxyl, amino, nitro, formyl, carboxyl, cyano, thiocyanato, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>1</sub>-C<sub>4</sub>)-haloalkoxy, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>1</sub>-C<sub>4</sub>)-haloalkylthio, mono-(C<sub>1</sub>-C<sub>4</sub>)-alkylamino, di-(C<sub>1</sub>-C<sub>4</sub>)-alkylamino, (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl-amino, [(C<sub>1</sub>-C<sub>4</sub>)-alkyl]-carbonyl, [(C<sub>1</sub>-C<sub>4</sub>)-alkoxy]-carbonyl, aminocarbonyl, mono-(C<sub>1</sub>-C<sub>4</sub>)-alkylamino-carbonyl, di-(C<sub>1</sub>-C<sub>4</sub>)-alkylamino-carbonyl, phenyl, phenoxy, phenylthio, phenylcarbonyl, heterocyclyl, heterocyclyloxy, heterocyclylthio and heterocyclylamino, where each of the 8 last-mentioned radicals is unsubstituted or substituted by one or more substituents selected from the group consisting of halogen, nitro, cyano, (C<sub>1</sub>-C<sub>4</sub>)-alkyl, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>1</sub>-C<sub>4</sub>)-haloalkyl, (C<sub>1</sub>-C<sub>4</sub>)-haloalkoxy, formyl, (C<sub>1</sub>-C<sub>4</sub>)-alkyl-carbonyl and (C<sub>1</sub>-C<sub>4</sub>)-alkoxy-carbonyl, or (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>9</sub>)-cycloalkoxy, (C<sub>3</sub>-C<sub>9</sub>)-cycloalkylamino, phenyl, phenoxy, phenylthio, phenylcarbonyl, heterocyclyl, heterocyclyloxy, heterocyclylthio or heterocyclylamino, where each of the 11 last-mentioned radicals is unsubstituted or substituted, or two adjacent radicals X together are a fused-on cycle having 4 to 6 ring atoms which is carbocyclic or contains hetero ring atoms selected from the group consisting of O, S and N and which is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C<sub>1</sub>-C<sub>4</sub>)-alkyl and oxo,

n is 0, 1, 3, 4 or 5 and

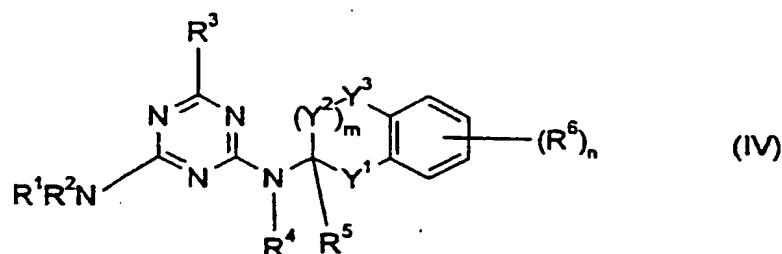
"Heterocyclyl" in the radicals mentioned above, independently of one another, is in each case a heterocyclic radical having 3 to 7 ring

atoms and 1 to 3 heteroatoms selected from the group consisting of N, O and S,

where

- a) the total of the carbon atoms in the radicals  $A^1$  and  $A^2-R^2$  is at least 6 carbon atoms or
- b) the total of the carbon atoms in the radicals  $A^1$  and  $A^2-R^2$  is 5 carbon atoms and  $A^1$  = a group of the formula  $-CH_2-$  or  $-CH_2CH_2-$  and  $R^1$  =  $(C_1-C_4)$ -alkyl,  $(C_1-C_4)$ -haloalkyl,  $(C_2-C_6)$ -haloalkenyl or  $(C_3-C_9)$ -cycloalkyl, which is unsubstituted or substituted;

- compounds of the formula (IV) or their salts



in which

- $R^1$  and  $R^2$  in each case independently of one another are hydrogen, amino, alkylamino or dialkylamino having in each case 1 to 6 carbon atoms in the alkyl radical, an acyclic or cyclic hydrocarbon radical or hydrocarbonoxy radical having in each case 1 to 10 carbon atoms or a heterocyclyl radical, heterocyclyloxy radical, heterocyclylthio radical or heterocyclylamino radical having in each case 3 to 6 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, where each of the five last-mentioned radicals is unsubstituted or substituted, or an acyl radical or
- $R^1$  and  $R^2$  together with the nitrogen atom of the group  $NR^1R^2$  are a heterocyclic radical having 3 to 6 ring atoms and 1 to 4 hetero ring atoms, where any further hetero ring atoms present in addition to the nitrogen atom are selected from the group consisting of N, O and S and the radical is unsubstituted or substituted,
- $R^3$  is halogen, cyano, thiocyanato, nitro or a radical of the formula  $-Z^1-R^7$ ,
- $R^4$  is hydrogen, amino, alkylamino or dialkylamino having in each case 1 to 6 carbon atoms in the alkyl radical, an acyclic or cyclic



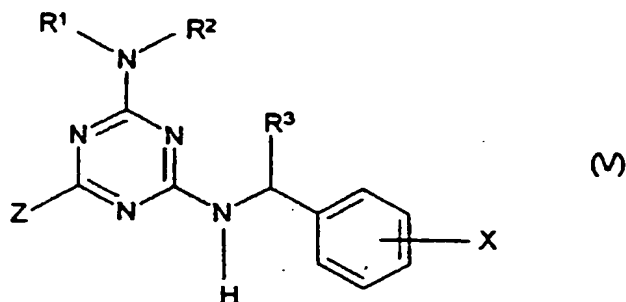
- hydrocarbon radical or hydrocarbonoxy radical having in each case 1 to 10 carbon atoms or a heterocyclyl radical, heterocyclyloxy radical or heterocyclylamino radical having in each case 3 to 6 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, where each of the five last-mentioned radicals is unsubstituted or substituted, or an acyl radical,
- 5  $R^5$  is halogen, cyano, thiocyanato, nitro or a radical of the formula  $-Z^2-R^8$ ,
- 10  $R^6$ , in the case where  $n=1$ , or the radicals  $R^6$  in each case independently of one another, if  $n$  is greater than 1, is/are halogen, cyano, thiocyanato, nitro or a group of the formula  $-Z^3-R^9$ ,
- $R^7$ ,  $R^8$ ,  $R^9$  in each case independently of one another are
- hydrogen or
  - an acyclic hydrocarbon radical, where carbon atoms in the
  - 15 chain may be substituted by heteroatoms selected from the group consisting of N, O and S, or
  - a cyclic hydrocarbon radical or
  - a heterocyclic radical,
- where each of the 3 last-mentioned radicals is unsubstituted or substituted,
- 20  $Z^1$ ,  $Z^2$ ,  $Z^3$  in each case independently of one another are
- a direct bond or
  - a divalent group of the formula  $-O-$ ,  $-S(O)_p-$ ,  $-S(O)_p-O-$ ,  $-O-S(O)_p-$ ,  $-CO-$ ,  $-CS-$ ,  $-S-CO-$ ,  $-CO-S-$ ,  $-O-CS-$ ,  $-CS-O-$ ,  $-S-CS-$ ,
  - 25  $-CS-S-$ ,  $-OCO-$ ,  $-CO-O-$ ,  $-NR'-$ ,  $-O-NR'-$ ,  $-NR'-O-$ ,  $-NR'-CO-$  or  $-CO-NR'-$ , where
- $p = 0, 1$  or  $2$  and  $R'$  is hydrogen, alkyl having 1 to 6 carbon atoms, phenyl, benzyl, cycloalkyl having 3 to 6 carbon atoms or alkanoyl having 1 to 6 carbon atoms,
- 30  $Y^1$ ,  $Y^2$ ,  $Y^3$  and, if  $m$  is 2, 3 or 4, further groups  $Y^2$  are, in each case independently of one another,
- a divalent group of the formula  $CR^aR^b$ , where  $R^a$  and  $R^b$  are identical or different and are in each case a radical selected from the group of the radicals possible for  $R^7$  to  $R^9$ , or
  - 35 - a divalent group of the formula  $-O-$ ,  $-CO-$ ,  $-C(=NR^c)-$ ,  $-S(O)_q-$ ,  $-NR^c-$  or  $-N(O)-$ , where  $q = 0, 1$  or  $2$  and  $R^c$  is hydrogen or alkyl having 1 to 4 carbon atoms, or
  - $Y^1$  or  $Y^3$  is a direct bond,

where two oxygen atoms of groups  $Y^2$  and  $Y^3$  are not adjacent,

m is 1, 2, 3 or 4,

n is 0, 1, 2, 3 or 4;

5 - substituted 2,4-diamino-1,3,5-triazines of the formula (V),



in which

10  $R^1$  is hydrogen or unsubstituted or hydroxyl-, cyano-, halogen- or  $C_1$ - $C_4$ -alkoxy-substituted alkyl having 1 to 6 carbon atoms,

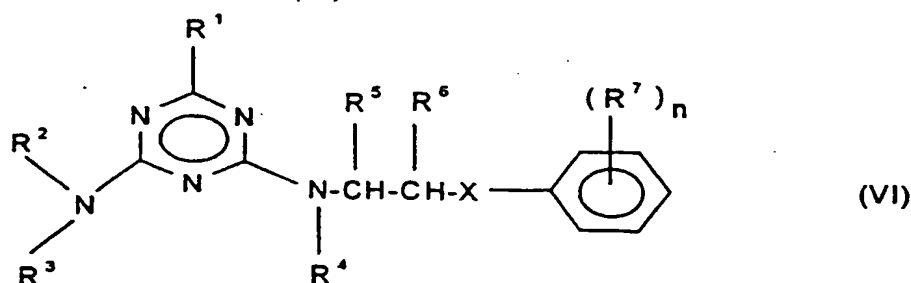
15  $R^2$  is hydrogen, formyl, in each case unsubstituted or cyano-, halogen- or  $C_1$ - $C_4$ -alkoxy-substituted alkyl, alkylcarbonyl, alkoxycarbonyl or alkylsulfonyl having in each case 1 to 6 carbon atoms in the alkyl groups, or is unsubstituted or cyano-, halo- $C_1$ - $C_4$ -alkyl-,  $C_1$ - $C_4$ -alkoxy-, halo- $C_1$ - $C_4$ -alkoxy- or  $C_1$ - $C_4$ -alkoxy-carbonyl-substituted phenylcarbonyl, naphthylcarbonyl, phenylsulfonyl or naphthylsulfonyl,

20  $R^3$  is unsubstituted or cyano-, halogen- or  $C_1$ - $C_4$ -alkoxy-substituted alkyl having 1 to 6 carbon atoms or is unsubstituted or cyano-, halogen- or  $C_1$ - $C_4$ -alkyl-substituted cycloalkyl having 3 to 6 carbon atoms,

25 X is a substituent selected from the group below:  
hydroxyl, cyano, nitro, halogen, in each case unsubstituted or hydroxyl-, cyano- or halogen-substituted alkyl or alkoxy having in each case 1 to 6 carbon atoms, in each case unsubstituted or halogen-substituted alkylcarbonyl, alkoxycarbonyl, alkylthio, alkylsulfinyl or alkylsulfonyl having in each case 1 to 6 carbon atoms in the alkyl groups, in each case unsubstituted or hydroxyl-, cyano-, nitro-, halogen-,  
30  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -haloalkyl-,  $C_1$ - $C_4$ -alkoxy or  $C_1$ - $C_4$ -haloalkoxy-substituted phenyl or phenoxy, and

Z is hydrogen, hydroxyl, halogen, is in each case unsubstituted or hydroxyl-, cyano-, nitro-, halogen-, C<sub>1</sub>-C<sub>4</sub>-alkoxy-, C<sub>1</sub>-C<sub>4</sub>-alkyl-carbonyl-, C<sub>1</sub>-C<sub>4</sub>-alkoxy-carbonyl-, C<sub>1</sub>-C<sub>4</sub>-alkylthio-, C<sub>1</sub>-C<sub>4</sub>-alkylsulfinyl- or C<sub>1</sub>-C<sub>4</sub>-alkylsulfonyl-substituted alkyl, alkoxy, alkylcarbonyl, alkoxy-carbonyl, alkylthio, alkylsulfinyl or alkylsulfonyl, having in each case 1 to 6 carbon atoms in the alkyl groups, is in each case unsubstituted or halogen-substituted alkenyl or alkynyl having in each case 2 to 6 carbon atoms or is unsubstituted or cyano-, halogen- or C<sub>1</sub>-C<sub>4</sub>-alkyl-substituted cycloalkyl having 3 to 6 carbon atoms,

- compounds of the formula (VI) and their salts



in which

R<sup>1</sup> is (C<sub>1</sub>-C<sub>6</sub>)-alkyl, which is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, hydroxyl, cyano, nitro, thiocyanato, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfonyl, (C<sub>2</sub>-C<sub>4</sub>)-alkenyl, (C<sub>2</sub>-C<sub>4</sub>)-alkynyl and unsubstituted or substituted phenyl, or phenyl, which is unsubstituted or substituted,

R<sup>2</sup> and R<sup>3</sup> in each case independently of one another are hydrogen, amino, (C<sub>1</sub>-C<sub>6</sub>)-alkyl-amino or di-[(C<sub>1</sub>-C<sub>6</sub>)-alkyl]-amino, a hydrocarbon radical or a hydrocarbonoxy radical having in each case 1 to 10 carbon atoms, a heterocyclyl radical, heterocyclyloxy radical or heterocyclylamino radical having in each case 3 to 9 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, where each of the five last-mentioned radicals is unsubstituted or substituted, or an acyl radical or

R<sup>2</sup> and R<sup>3</sup> together with the nitrogen atom of the group NR<sup>2</sup>R<sup>3</sup> are a heterocyclic radical having 3 to 6 ring atoms and 1 to 4 hetero ring atoms, where any hetero ring atoms present in addition to the

nitrogen atom are selected from the group consisting of N, O and S and the radical is unsubstituted or substituted,

$R^4$  is hydrogen, amino,  $(C_1-C_6)$ -alkylamino, di- $[(C_1-C_6)$ -alkyl]-amino, a hydrocarbon radical or hydrocarbonoxy radical having in each case 1 to 10 carbon atoms or a heterocyclyl radical, heterocycloxy radical or heterocyclylamino radical having in each case 3 to 9 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of N, O and S, where each of the five last-mentioned radicals is unsubstituted or substituted, or an acyl radical,

$R^5$  and  $R^6$  in each case independently of one another are halogen, nitro, cyano, thiocyanato or a radical of the formula  $-X^1-A^1$ , in which  $X^1$  is a direct bond or a divalent group of the formula  $-O-$ ,  $-S(O)_p-O-$ ,  $-O-S(O)_p-$ ,  $-CO-$ ,  $-O-CO-$ ,  $-CO-O-$ ,  $-NR'-$ ,  $-O-NR'-$ ,  $-NR'-O-$ ,  $-NR'-CO-$  or  $-CO-NR'-$ , where in the formulae  $p = 0, 1$  or  $2$  and  $R'$  is hydrogen, alkyl having 1 to 6 carbon atoms, phenyl, benzyl, cycloalkyl having 3 to 6 carbon atoms or alkanoyl having 1 to 6 carbon atoms, and in which  $A^1$  is hydrogen or a hydrocarbon radical or a heterocyclic radical, where each of the two last-mentioned radicals is unsubstituted or substituted, or

$R^5$  and  $R^6$  together are an alkylene chain having 2 to 4 carbon atoms which is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,  $(C_1-C_4)$ -alkyl and oxo,

$R^7$ , independently of other radicals  $R^7$ , is in each case halogen, nitro, cyano, thiocyanato or a radical of the formula  $-X^2-A^2$ , in which  $X^2$  is a direct bond or a divalent group of the formula  $-O-$ ,  $-S(O)_q-$ ,  $-S(O)_q-O-$ ,  $-O-S(O)_q-$ ,  $-CO-$ ,  $-O-CO-$ ,  $-CO-O-$ ,  $-NR''-$ ,  $-O-NR''-$ ,  $-NR''-O-$ ,  $-NR''-CO-$  or  $-CO-NR''-$ , where in the formulae  $q = 0, 1$  or  $2$  and  $R'' =$  hydrogen,  $(C_1-C_6)$ -alkyl, phenyl,  $(C_3-C_6)$ -cycloalkyl, and in which  $A^2$  is hydrogen or a hydrocarbon radical or a heterocyclic radical, where each of the two last-mentioned radicals is unsubstituted or substituted,

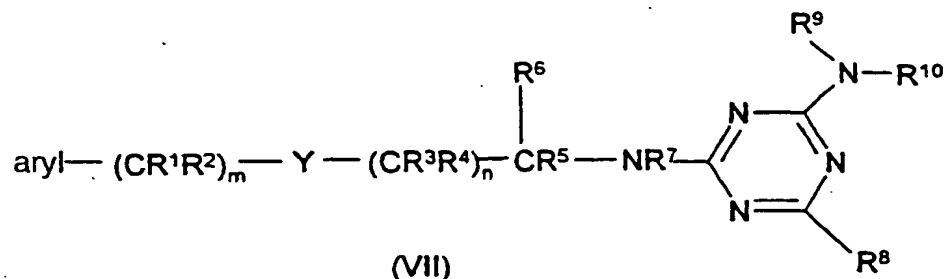
or two adjacent radicals  $R^7$  together are a fused-on cycle having 4 to 6 ring atoms which is carbocyclic or contains hetero ring atoms selected from the group consisting of O, S and N and which is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,  $(C_1-C_4)$ -alkyl and oxo,

$X$  is a group of the formula  $-O-$ ,  $-S(O)_r-$ ,  $-NR'-$  or  $-N(O)-$ , where  $r = 0, 1$  or  $2$  and  $R'$  is hydrogen or alkyl having 1 to 4 carbon atoms, and

**n** is 0, 1, 2, 3, 4 or 5,

where the grouping -CHR<sup>5</sup>-CHR<sup>6</sup>- has to contain at least 4 carbon atoms if X is -O-:

- 5 - 2,4-amino-1,3,5-triazines of the formula (VII), if appropriate also in their salt form



in which

- 10 aryl is an unsubstituted or substituted mono- or bicyclic aromatic radical having 5 to 14 ring atoms, 1, 2, 3 or 4 of which, in each case independently of one another, can be from the group consisting of oxygen, sulfur and nitrogen;
- 15 -Y- is a divalent unit selected from the group consisting of -O-, -S-, -NR<sup>11</sup>-, -NR<sup>12</sup>CONR<sup>13</sup>-, -CO<sub>2</sub>-, -OCO<sub>2</sub>-, -OCONR<sup>14</sup>-, -SO-, -SO<sub>2</sub>-, -SO<sub>2</sub>O-, -OSO<sub>2</sub>O-, -SO<sub>2</sub>NR<sup>14</sup>-, -O-NR<sup>11</sup>-, -NR'-NR''-, in which R' and R'' independently of one another are defined as R<sup>14</sup>, and -(Y'-CR<sup>a</sup>R<sup>b</sup>-CR<sup>c</sup>R<sup>d</sup>)<sub>i</sub>-Y'', in which Y' and Y'' independently of one another are O, S, NH or N[(C<sub>1</sub>-C<sub>4</sub>)-alkyl], R<sup>a</sup>, R<sup>b</sup>, R<sup>c</sup> and R<sup>d</sup> in each case independently of one another are H or (C<sub>1</sub>-C<sub>4</sub>)-alkyl and i is an integer from 1 to 5, or a trivalent unit of the formula -O-N=,
- 20 m is 0, 1, 2, 3, 4 or 5,
- n is an integer from 1 to 10, with the proviso that n is not 1 if m is zero and -Y- is -O-, -S-, -SO-, -SO<sub>2</sub>- or -NR<sup>11</sup>-;
- 25 R<sup>1</sup>, R<sup>2</sup> in each case independently of one another are a radical of a group G1 comprising hydrogen, (C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>2</sub>-C<sub>8</sub>)-alkenyl, (C<sub>2</sub>-C<sub>8</sub>)-alkynyl, (C<sub>1</sub>-C<sub>10</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy, aryl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl and (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, where in each case the cyclic moiety of the four last-mentioned radicals is unsubstituted or substituted by one or more identical or different radicals selected from the group
- 30 consisting of halogen, nitro, cyano, thiocyanato and -B-X<sup>1</sup>, where -B- and X<sup>1</sup> are as defined below, and where in each case the noncyclic moiety of the eight last-mentioned radicals of group G1 is unsubstituted or

substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and  $-B-X^2$ , where  $X^2$  is as defined below, and where in each case the noncyclic moiety of the radicals of group G1 may be interrupted by one or more identical or different heteroatoms selected from the group consisting of oxygen and sulfur,

$R^1$  and  $R^2$  of a  $(CR^1R^2)$  group form, together with the carbon atom that carries them, a carbonyl group, a group  $CR^{15}R^{16}$  or a 3- to 6-membered ring which optionally contains one or two identical or different heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and  $-B-X^1$ , or

two  $R^1$  of two directly or not directly adjacent  $(CR^1R^2)$  groups form, together with the carbon atoms that carry or link them, an unsubstituted or substituted 3- to 6-membered ring which optionally contains one or two identical or different heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and  $-B-X^1$ , or

two  $R^1$  of two directly adjacent  $(CR^1R^2)$  groups, together with the bond between the carbon atoms of the groups, are a double bond, or two  $R^1$  and two  $R^2$  of two directly adjacent  $(CR^1R^2)$  groups, together with the bond between the carbon atoms of the groups, are a triple bond, or

$R^1$  is a binding site for the double bond in the case that Y is a trivalent unit  $=N-O-$  adjacent to a  $CR^1R^2$  group,

$R^3$ ,  $R^4$  in each case independently of one another are a radical of a group G2 comprising hydrogen,  $(C_1-C_{10})$ -alkyl,  $(C_2-C_8)$ -alkenyl,  $(C_2-C_8)$ -alkynyl,  $(C_1-C_{10})$ -alkoxy,  $(C_1-C_{10})$ -alkylthio,  $(C_1-C_{10})$ -alkylsulfinyl,  $(C_1-C_{10})$ -alkylsulfonyl,  $(C_3-C_8)$ -cycloalkyl,  $(C_3-C_8)$ -cycloalkoxy, aryl, aryl- $(C_1-C_6)$ -alkyl, aryl- $(C_1-C_6)$ -alkoxy,  $(C_3-C_8)$ -cycloalkyl- $(C_1-C_6)$ -alkyl,  $(C_3-C_8)$ -cycloalkyl- $(C_1-C_6)$ -alkoxy,  $(C_3-C_8)$ -cycloalkoxy- $(C_1-C_6)$ -alkyl and  $(C_3-C_8)$ -cycloalkoxy- $(C_1-C_6)$ -alkoxy, where in each case the cyclic moiety of the nine last-mentioned

radicals is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato und  $-B-X^1$ , where  $-B-$  and  $X^1$  are as defined below, and where in each case the noncyclic moiety of the sixteen last-mentioned radicals of group G2 is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and  $-B-X^2$ , where  $X^2$  is as defined below, and where in each case the noncyclic moiety of the radicals of group G2 may be interrupted by one or more identical or different heteroatoms selected from the group consisting of oxygen and sulfur, or

$R^3$  and  $R^4$  form, together with the carbon atom that carries them, a carbonyl group, a group  $CR^{15}R^{16}$  or a 3- to 6-membered ring which optionally contains one or two identical or different heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and  $-B-X^1$ , or

two  $R^3$  of two directly or not directly adjacent ( $CR^3R^4$ ) groups form, together with the carbon atoms that carry or link them, an unsubstituted or substituted 3- to 6-membered ring which optionally contains one or two identical or different heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and  $-B-X^1$ , or

two  $R^3$  of two directly adjacent ( $CR^3R^4$ ) groups, together with the bond between the carbon atoms of the groups, are a double bond, or two  $R^3$  and two  $R^4$  of two directly adjacent ( $CR^3R^4$ ) groups, together with the bond between the carbon atoms of the groups, are a triple bond, or

$R^3$  is a binding site for the double bond in the case that Y is a trivalent unit  $-O-N=$  adjacent to a  $CR^3R^4$  group,

$-B-$  is a direct bond or a divalent unit selected from the group consisting of  $-O-$ ,  $-S-$ ,  $-NR^{11}-$ ,  $-NR^{12}CONR^{13}-$ ,  $-CO_2-$ ,  $-OCO_2-$ ,  $-OCONR^{14}-$ ,  $-SO-$ ,  $-SO_2-$ ,  $-SO_2O-$ ,  $-OSO_2O-$  and  $-SO_2NR^{14}-$ ;

$X^1$  is hydrogen, (C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>2</sub>-C<sub>8</sub>)-alkenyl, (C<sub>2</sub>-C<sub>8</sub>)-alkynyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl or heterocyclyl having 3 to 9 ring atoms, 1, 2 or 3 of which are from the group consisting of nitrogen, oxygen and sulfur, where  
5 the five last-mentioned radicals are unsubstituted or substituted by one or more identical or different halogen atoms;

$X^2$  is hydrogen or heterocyclyl having 3 to 9 ring atoms, 1, 2 or 3 of which are from the group consisting of nitrogen, oxygen and sulfur,  
10 which heterocyclyl is unsubstituted or substituted by one or more identical or different halogen atoms;

$R^5$ ,  $R^6$  in each case independently of one another are a radical of group G2, or  
15

$R^3$  and  $R^5$  of two directly or not directly adjacent (CR<sup>3</sup>R<sup>4</sup>) and (CR<sup>5</sup>R<sup>6</sup>) groups form, together with the carbon atoms linking them, an unsubstituted or substituted 3- to 6-membered ring which optionally contains one or two identical or different heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted by  
20 one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato and -B-X<sup>1</sup>, or

$R^5$  and  $R^6$  form, together with the carbon atom that carries them, a  
25 carbonyl group, a group CR<sup>15</sup>R<sup>16</sup> or a 3- to 6-membered ring which optionally contains one or two identical or different heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato  
30 and -B-X<sup>1</sup>, or

$R^6$  is heterocyclyl;

$R^7$  is hydrogen, amino, alkylcarbonyl, alkylamino or dialkylamino  
35 having in each case one to six carbon atoms in the alkyl radical, an acyclic hydrocarbon or hydrocarbonoxy radical having in each case one to six carbon atoms, a cyclic hydrocarbon or hydrocarbonoxy radical having in each case three to six carbon atoms or heterocyclyl, heterocycloxy or



heterocyclamino having in each case three to six ring atoms and one to three hetero ring atoms selected from the group consisting of nitrogen, oxygen and sulfur, where each of the ten last-mentioned radicals is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, halo-(C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>2</sub>-C<sub>4</sub>)-alkenyl, (C<sub>2</sub>-C<sub>4</sub>)-alkynyl, (C<sub>2</sub>-C<sub>4</sub>)-alkenyloxy, (C<sub>2</sub>-C<sub>4</sub>)-alkynyloxy, hydroxyl, amino, acylamino, alkylamino, dialkylamino, nitro, carboxyl, cyano, azido, (C<sub>1</sub>-C<sub>4</sub>)-alkoxycarbonyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylcarbonyl, formyl, carbamoyl, mono- and di-(C<sub>1</sub>-C<sub>4</sub>)-alkyl-aminocarbonyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfinyl, halo-(C<sub>1</sub>-C<sub>4</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfonyl, halo-(C<sub>1</sub>-C<sub>4</sub>)-alkylsulfonyl and, in the case of cyclic radicals, also (C<sub>1</sub>-C<sub>4</sub>)-alkyl and halo-(C<sub>1</sub>-C<sub>4</sub>)-alkyl;

R<sup>8</sup> is (C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>2</sub>-C<sub>8</sub>)-alkenyl, (C<sub>2</sub>-C<sub>8</sub>)-alkynyl, which are unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, cyano, nitro, thiocyanato, hydroxyl, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylsulfonyl, phenyl, (C<sub>3</sub>-C<sub>9</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>9</sub>)-cycloalkoxy and heterocyclyl having three to six ring atoms and one to three hetero ring atoms selected from the group consisting of oxygen, nitrogen and sulfur, which heterocyclyl is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, amino, (C<sub>1</sub>-C<sub>4</sub>)-alkyl, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, halo-(C<sub>1</sub>-C<sub>4</sub>)-alkyl and halo-(C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy or a heterocyclyl radical having three to six ring atoms, where these three last-mentioned radicals are unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of halogen, nitro, cyano, thiocyanato, (C<sub>1</sub>-C<sub>4</sub>)-alkyl, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, halo-(C<sub>1</sub>-C<sub>4</sub>)-alkyl and halo-(C<sub>1</sub>-C<sub>4</sub>)-alkoxy;

R<sup>9</sup>, R<sup>10</sup> in each case independently of one another are hydrogen, amino, (C<sub>1</sub>-C<sub>10</sub>)-alkylcarbonyl, (C<sub>1</sub>-C<sub>10</sub>)-alkylamino, di-[(C<sub>1</sub>-C<sub>10</sub>)-alkyl]amino, (C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>1</sub>-C<sub>10</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy, heterocyclyl, heterocyclloxy or heterocyclamino having in each case 3 to 6 ring atoms and 1 to 3 hetero ring atoms selected from the group consisting of oxygen, nitrogen and sulfur, where each of the ten last-mentioned radicals is unsubstituted or substituted, or

$R^9$  and  $R^{10}$  form, together with the nitrogen atom that carries them, a heterocycle having a total of three to six ring atoms, one to four of which are hetero ring atoms, where any further hetero ring atoms present in addition to the nitrogen atom are selected from the group consisting of oxygen, nitrogen and sulfur and where this heterocycle is unsubstituted or substituted;

$R^{11}$  is hydrogen, amino,  $(C_1-C_{10})$ -alkylamino, di- $[(C_1-C_{10})$ -alkyl]amino,  $(C_1-C_{10})$ -alkyl,  $(C_3-C_8)$ -cycloalkyl,  $(C_3-C_8)$ -cycloalkyl- $(C_1-C_6)$ -alkyl,  $(C_1-C_{10})$ -alkoxy,  $(C_1-C_6)$ -alkoxy- $(C_1-C_6)$ -alkoxy,  $(C_3-C_8)$ -cycloalkoxy,  $(C_1-C_{10})$ -alkylcarbonyl, where the nine last-mentioned radicals are unsubstituted or substituted;

$R^{12}$ ,  $R^{13}$  in each case independently of one another are hydrogen,  $(C_1-C_{10})$ -alkyl,  $(C_2-C_8)$ -alkenyl,  $(C_2-C_8)$ -alkynyl, phenyl, phenyl- $(C_1-C_6)$ -alkyl,  $(C_3-C_8)$ -cycloalkyl,  $(C_3-C_8)$ -cycloalkyl- $(C_1-C_6)$ -alkyl, where in each case the cyclic moiety of the four last-mentioned radicals is unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of  $(C_1-C_4)$ -alkyl, halo- $(C_1-C_4)$ -alkyl,  $(C_1-C_4)$ -alkoxy and halo- $(C_1-C_4)$ -alkoxy, or

$R^{12}$  and  $R^{13}$  form, together with the N-CO-N group that carries them, a 5- to 8-membered ring which, in addition to the two nitrogen atoms mentioned, may contain a further heteroatom selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted,

$R^{14}$  is hydrogen or in each case unsubstituted or substituted  $(C_1-C_{10})$ -alkyl or  $(C_3-C_{10})$ -cycloalkyl and

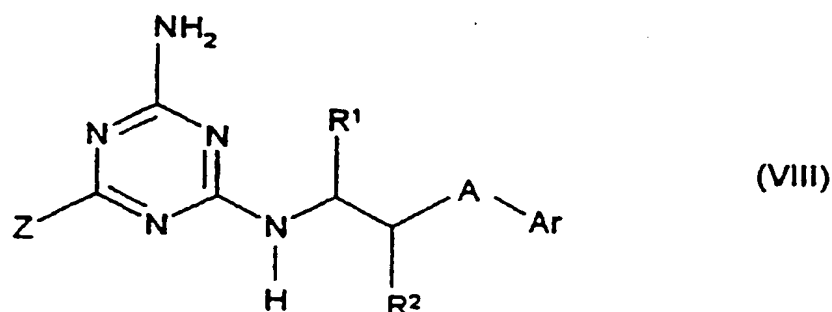
$R^{15}$ ,  $R^{16}$  in each case independently of one another are hydrogen, aryl  $(C_1-C_{10})$ -alkoxy, aryl- $(C_1-C_6)$ -alkyl,  $(C_1-C_{10})$ -alkyl,  $(C_1-C_{10})$ -alkylthio, where the five last-mentioned radicals are unsubstituted or substituted, and where the aliphatic carbon skeleton of the three last-mentioned radicals may be interrupted by one or more identical or different heteroatoms selected from the group consisting of oxygen and sulfur, or

$R^{15}$  and  $R^{16}$  form, together with the carbon atom that carries them, a 3- to 6-membered ring which optionally contains one or two identical or different

heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur and which is unsubstituted or substituted;

- substituted 2-amino-4-alkylamino-1,3,5-triazines of the formula (VIII)

5

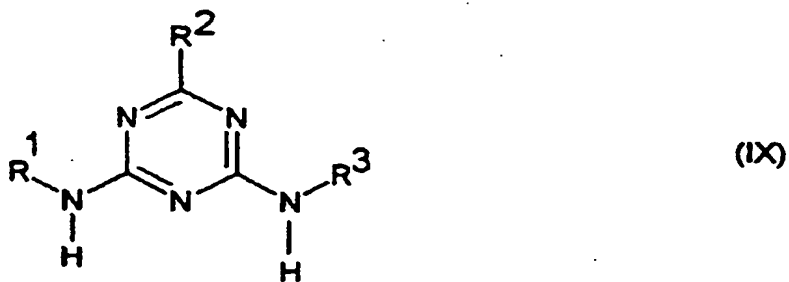


in which

- 10       $R^1$     is in each case unsubstituted or substituted alkyl having 2 to 6 carbon atoms or cycloalkyl having 3 to 6 carbon atoms,  
           $R^2$     is hydrogen or is alkyl having 1 to 4 carbon atoms,  
          A    is oxygen or methylene,  
          Ar    is in each case unsubstituted or substituted phenyl, naphthyl  
 15           or heterocyclyl, and  
          Z    is hydrogen, is halogen or is in each case unsubstituted or substituted alkyl, alkoxy, alkylcarbonyl, alkoxycarbonyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkenyl or alkynyl;

and

- 20      - 2,4-amino-1,3,5-triazines of the formula (IX), if appropriate also in their salt form,



in which

- 25       $R^1$     is hydrogen or is unsubstituted or substituted alkyl, alkylcarbonyl, alkoxycarbonyl, alkenylcarbonyl or alkynylcarbonyl;

$R^2$  is hydrogen or is in each case unsubstituted or substituted alkenyl or alkynyl, and

$R^3$  is the grouping -A-Z; in which

5       A is unsubstituted or substituted straight-chain or branched alkanediyl which optionally contains, at the beginning or at the end or within the alkanediyl chain, a heteroatom (group) selected from the group consisting of O, S, NH and alkylimino, and

10       Z is an unsubstituted or substituted monocyclic or bicyclic, carbocyclic or heterocyclic grouping selected from the group consisting of cyclopentyl, cyclohexyl, phenyl, naphthyl, tetralinyl, decalinyl, indanyl, indenyl, furyl, benzofuryl, dihydrobenzofuryl, thienyl, benzothienyl, dihydrobenzothienyl, isobenzofuryl, dihydroisobenzofuryl, isobenzothienyl, dihydroisobenzothienyl, 15       pyrrolyl, indolyl, isoindolyl, indolinyl, isoindolinyl, benzodioxolyl, oxazolyl, benzoxazolyl, thiazolyl, benzothiazolyl, indazolyl, oxadiazolyl, thiadiazolyl, pyrazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, quinolyl, isoquinolyl, quinoxalinyl, cinnolinyl and phthalazinyl.

20

Halogen is preferably chlorine, bromine and iodine; in haloalkyl, halogen is preferably fluorine.

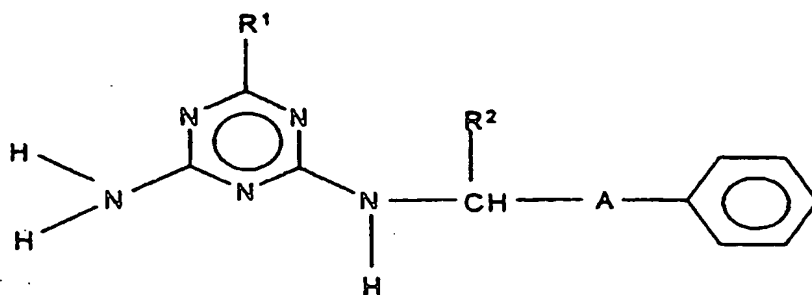
$R^1$  is preferably  $-\text{CF}(\text{CH}_3)_2$ .

$R^2$  is preferably  $(\text{C}_1\text{-C}_4)\text{-alkyl}$  or  $(\text{C}_3\text{-C}_4)\text{-cycloalkyl}$ .

25

A is preferably  $-\text{CH}_2-$ ,  $-\text{CH}_2\text{-CH}_2-$  or  $-\text{CH}_2\text{-CH}_2\text{-CH}_2-$ .

3. The herbicide combination as claimed in claim 1 or 2, which comprises, as component (A), one or more triazine derivatives of the 30       formula (X)



(X)

in which

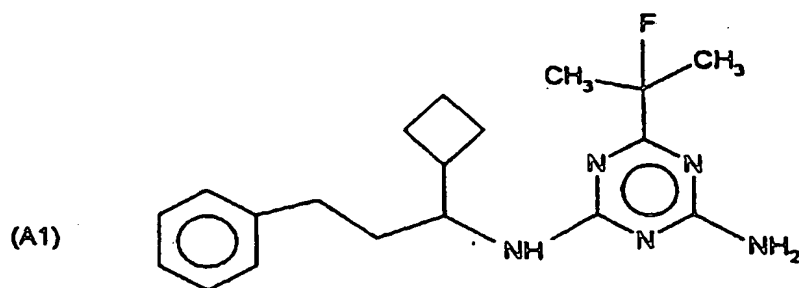
$R^1$  is (C<sub>1</sub>-C<sub>4</sub>)-alkyl or (C<sub>1</sub>-C<sub>4</sub>)-haloalkyl;

$R^2$  is (C<sub>1</sub>-C<sub>4</sub>)-alkyl, (C<sub>3</sub>-C<sub>6</sub>)-cycloalkyl or (C<sub>3</sub>-C<sub>6</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>4</sub>)-alkyl and

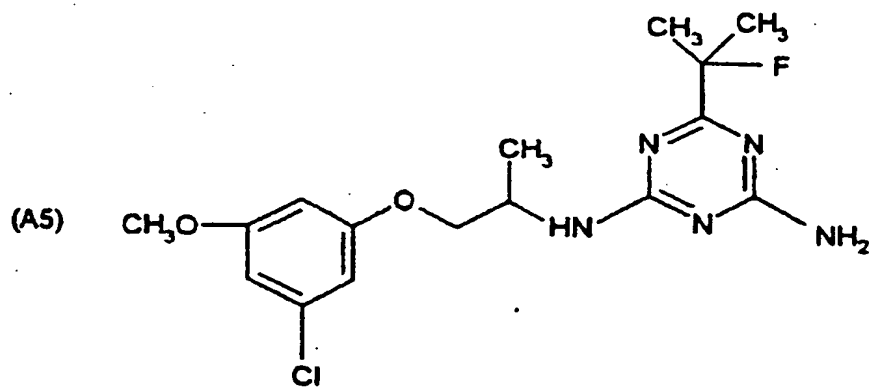
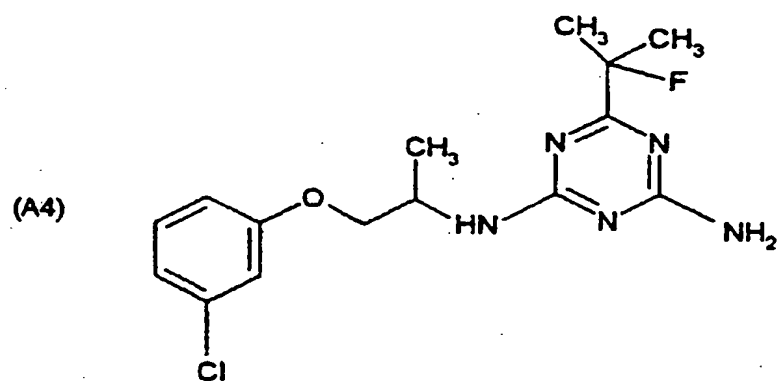
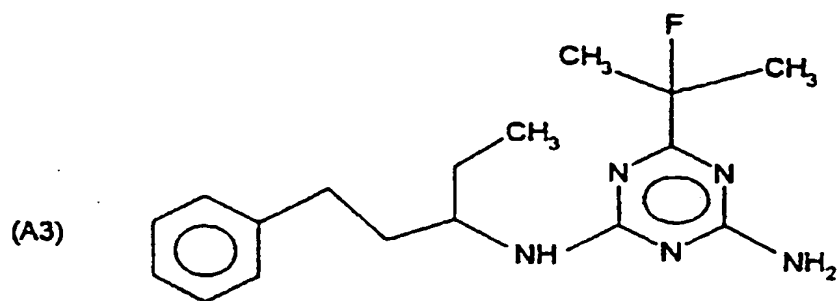
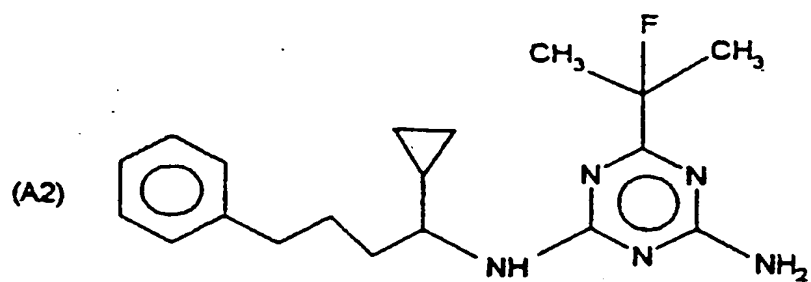
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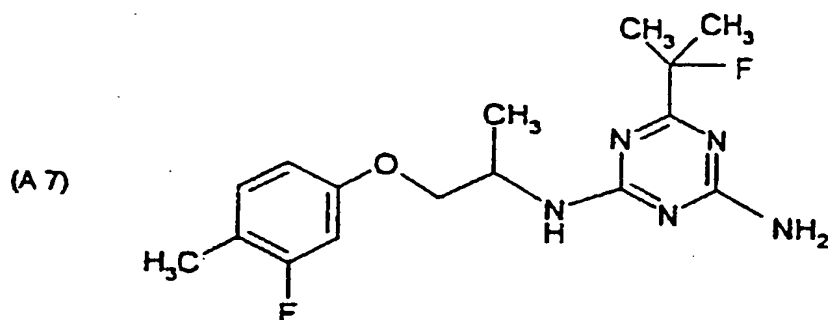
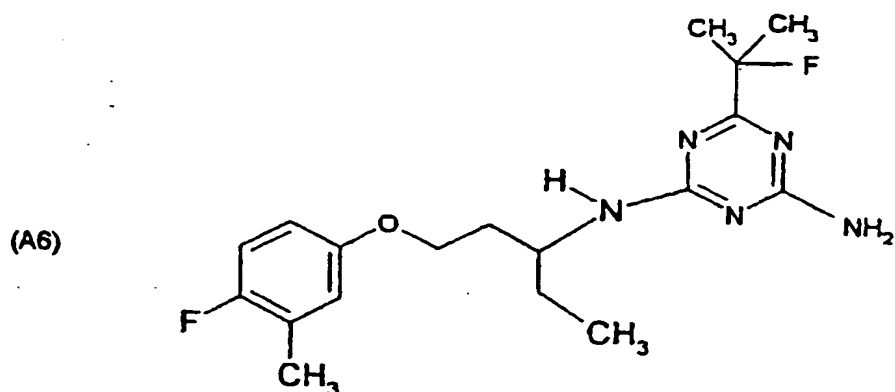
A is -CH<sub>2</sub>-, -CH<sub>2</sub>-CH<sub>2</sub>-, -CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-, -O-, -CH<sub>2</sub>-CH<sub>2</sub>-O-, -CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-O-.

4. The herbicide combination as claimed in any of claims 1 to 3, which  
 10 comprises, as component (A), one or more triazine derivatives of the formulae (A1), (A2), (A3), (A4), (A5), (A6) and (A7):



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5. The herbicide combination as claimed in one or more of claims 1 to 4, wherein component (B) comprises one or more compounds selected from the group consisting of

- |    |          |  |
|----|----------|--|
| 5  | (B1.1.1) | isoproturon,   |
|    | (B1.1.2) | chlorotoluron,   |
|    | (B1.2.1) | flufenacet,  |
|    | (B1.2.2) | pendimethalin,   |
|    | (B1.2.3) | prosulfocarb,  |
| 10 | (B1.3.1) | clodinafop-propargyl,  |
|    | (B1.3.2) | diclofop-methyl,   |
|    | (B1.3.3) | fenoxaprop-P-ethyl and fenoxaprop-ethyl,                                       |
|    | (B1.3.4) | quizalofop-P and its salts and esters and quizalofop and its salts and esters, |
| 15 | (B1.3.5) | fluazifop-P and its esters and fluazifop and its esters,                       |
|    | (B1.3.6) | haloxyfop and haloxyfop-P and their esters,                                    |
|    | (B1.3.7) | propaquizafop (PM, p. 1021-1022),  |
|    | (B1.3.8) | cyhalofop and its esters,  |
|    | (B1.4.1) | sethoxydim,  |
| 20 | (B1.4.2) | cycloxydim   |

- (B1.4.3) clethodim,
- (B1.4.4) clefoxidim,
- (B1.4.5) tralkoxidim,
- (B1.5.1) dimethenamid,
- 5 (B1.5.2) penthoxamid,
- (B1.5.3) butachlor,
- (B1.5.4) pretilachlor,
- (B1.6.1) imazamethabenz-methyl
- (B1.6.2) simazin
- 10 (B1.6.3) molinate
- (B1.6.4) thiobencarb
- (B1.6.4) MY 100,
- (B1.6.5) anilofos,
- (B1.6.6) cafenstrole,
- 15 (B1.6.7) mefenacet,
- (B1.6.8) fentrazamid,
- (B1.6.9) thiazopyr,
- (B1.6.10) oxadiazon,
- (B1.6.11) esprocarb,
- 20 (B1.6.12) pyributicarb,
- (B1.6.13) azimsulfuron,
- (B1.6.14) AEB391 and related azoles,
- (B1.6.15) thenylchlor,
- (B1.6.16) pentoxazone,
- 25 (B1.6.17) pyriminobac and pyriminobac-methyl,
- (B1.6.18) flucarbazone and its salts,
- (B1.6.19) procarbazon and its salts,
- (B2.1.1) tribenuron-methyl,
- (B2.1.2) thifensulfuron and its esters,
- 30 (B2.1.3) prosulfuron,
- (B2.1.4) amidosulfuron,
- (B2.1.5) chlorimuron and its esters,
- (B2.1.6) halosulfuron and its esters and salts,
- (B2.1.7) LAB271272, (= tritosulfuron),
- 35 (B2.1.8) bensulfuron-methyl,
- (B2.1.9) ethoxysulfuron,
- (B2.1.10) cinosulfuron,
- (B2.1.11) pyrazosulfuron and its esters,



- (B2.1.12) imazosulfuron,
- (B2.1.13) cyclosulfamuron,
- (B2.2.1) MCPA,
- (B2.2.2) 2,4-D,
- 5 (B2.2.3) dichlorprop,
- (B2.2.4) mecoprop-(P),
- (B2.2.5) fluoroxypyr,
- (B2.2.6) dicamba,
- (B2.2.7) clopyralid,
- 10 (B2.2.8) picloram,
- (B.2.3.1) bromoxynil,
- (B.2.3.2) ioxynil,
- (B2.4.1) fluoroglycofen-ethyl,
- (B2.4.2) aclonifen,
- 15 (B2.4.3) acifluorfen and its salts,
- (B2.5.1) cloransulam and its esters
- (B2.5.2) florasulam,
- (B2.6.1) bentazone,
- (B2.6.2) bifenox,
- 20 (B2.6.3) carfentrazone-ethyl,
- (B2.6.4) pyraflufen,
- (B2.6.5) pyridate,
- (B2.6.6) linuron,
- (B2.6.7) diflufenzopyr and its salts,
- 25 (B2.6.8) cinidon-ethyl,
- (B2.6.9) clopyralid and its salts and esters,
- (B2.6.10) metribuzin,
- (B2.6.11) picolinafen,
- (B2.6.12) clomazone,
- 30 (B2.6.13) bromobutide,
- (B2.6.14) benfuresate,
- (B2.6.15) dithiopyr,
- (B2.6.16) triclopyr and its salts and esters,
- (B3.1.1) metsulfuron and its esters,
- 35 (B3.1.2) triasulfuron,
- (B3.1.3) chlorsulfuron,
- (B3.1.4) iodosulfuron-methyl,
- (B3.1.5) AEF060,

- (B3.1.6) sulfosulfuron,
- (B3.1.7) flupyr-sulfuron and its salts,
- (B3.1.8) nicosulfuron,
- (B3.1.9) rimsulfuron,
- 5 (B3.1.10) primisulfuron and esters,
- (B3.1.11) AEF360,
- (B3.2.1) cyanazine,
- (B3.2.2) atrazin
- (B3.2.3) terbuthylazin,
- 10 (B3.2.4) terbutryn,
- (B3.3.1) acetochlor
- (B3.3.2) metolachlor,
- (B3.3.3) alachlor,
- (B3.4.1) clomazone,
- 15 (B3.4.2) diflufenican,
- (B3.4.3) flumetsulam,
- (B3.4.4) flurtamone,
- (B3.4.5) isoxaflutole,
- (B3.4.6) metosulam,
- 20 (B3.4.7) metribuzin,
- (B3.4.8) paraquat (salts),
- (B3.4.9) benoxacor,
- (B3.4.10) sulcotrione,
- (B3.4.11) mesotrione,
- 25 (B3.4.12) quinclorac,
- (B3.4.13) propanil,
- (B3.4.14) bispyribac, bispyribac-Na,
- (B3.4.15) LGC 40863 (pyribenzoxim),
- (B3.4.16) oxadiargyl,
- 30 (B3.4.17) norflurazon,
- (B3.4.18) fluometuron,
- (B3.4.19) methylarsonic acid and its salts (DSMA, MSMA).
- (B3.4.20) prometryn,
- (B3.4.21) trifluralin,
- 35 (B4.1.1) glufosinate,
- (B4.1.2) glufosinate monoammonium salt,
- (B4.1.3) L-glufosinate,
- (B4.1.4) L-glufosinate monoammonium salt,

- (B4.1.5) bilanafos,  
(B4.2.1) glyphosate,  
(B4.2.2) glyphosate monoisopropylammonium salt,  
(B4.2.3) glyphosate sodium salt,  
5 (B4.2.4) sulfosate,  
(B4.3.1) imazapyr,  
(B4.3.2) imazethapyr  
(B4.3.3) imazamethabenz, and its salts and esters,  
(B4.3.4) imazamox and its salts and esters,  
10 (B4.3.5) imazaquin and its salts and esters,  
(B4.3.6) imazapic (AC 263,222) and its salts and esters  
(B4.4.1) WC9717 or CGA276854,  
(B4.4.2) azafenidin,  
(B4.4.3) diuron and  
15 (B4.4.4) oxyfluorfen,  
and, if appropriate, their agriculturally useful salts.

6. The herbicide combination as claimed in any of claims 1 to 5, which  
comprises one or more further components selected from the group  
20 consisting of crop protection agents of a different type, additives which are  
customary in crop protection and formulation auxiliaries.

7. A method for controlling harmful plants, which comprises applying  
the herbicides of the herbicide combination as defined in one or more of  
25 claims 1 to 6 together or separately, pre-emergence, post-emergence or  
pre- and post-emergence, to the plants, parts of plants, plant seeds or the  
area under cultivation.

8. The method as claimed in claim 7 for the selective control of harmful  
30 plants in crops of plants.

9. The method as claimed in claim 6 for the control of harmful plants in  
cereal.

35 10. The use of the herbicide combinations defined in any of claims 1 to 6  
for controlling harmful plants.

## Abstract

## Synergistic active compound combinations for controlling harmful plants

The invention relates to synergistic herbicide combinations for controlling harmful plants in crops of plants. The combinations comprise active compounds (A) and (B) where

(A) are aminotriazines having a partial structure of the formula (I) as claimed in claim 1,

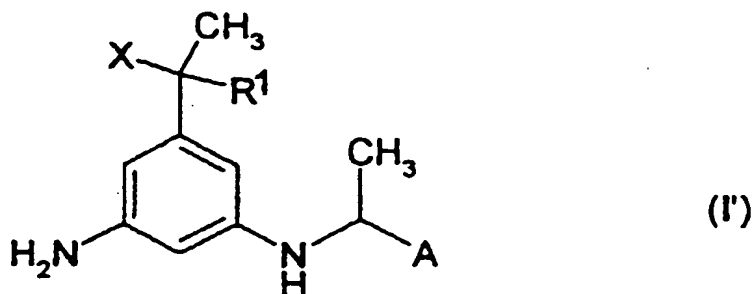
abbreviated T-NR-L-M

where L and M are as defined in claim 1, T is a 1,3,5-triazine and NR is an unsubstituted or substituted amino group, and

(B) is one or more herbicides selected from the group of compounds consisting of

- (B1) foliar- and/or soil-acting herbicides which are active against monocotyledonous harmful plants,
- (B2) herbicides which are active against predominantly dicotyledonous harmful plants and
- (B3) herbicides which are active against monocotyledonous and dicotyledonous harmful plants and optionally
- (B4) herbicides which are active against monocotyledonous and dicotyledonous harmful plants and which can be employed specifically in tolerant crops or on non-crop land,

except for combinations of herbicides of the formula (I')



in which  $R^1$  = H or methyl, X = Cl, F and A = a phoxymethyl group which is unsubstituted in the phenyl ring or substituted by one or two radicals selected from the group consisting of methyl and fluorine, or is a benzofuran-2-yl or benzothiophen-2-yl radical, with herbicides from the

group consisting of isoproturon, diclofop-methyl, fenoxaprop-ethyl and amidosulfuron.